

# The View of Southern Vowels from Large-Scale Data

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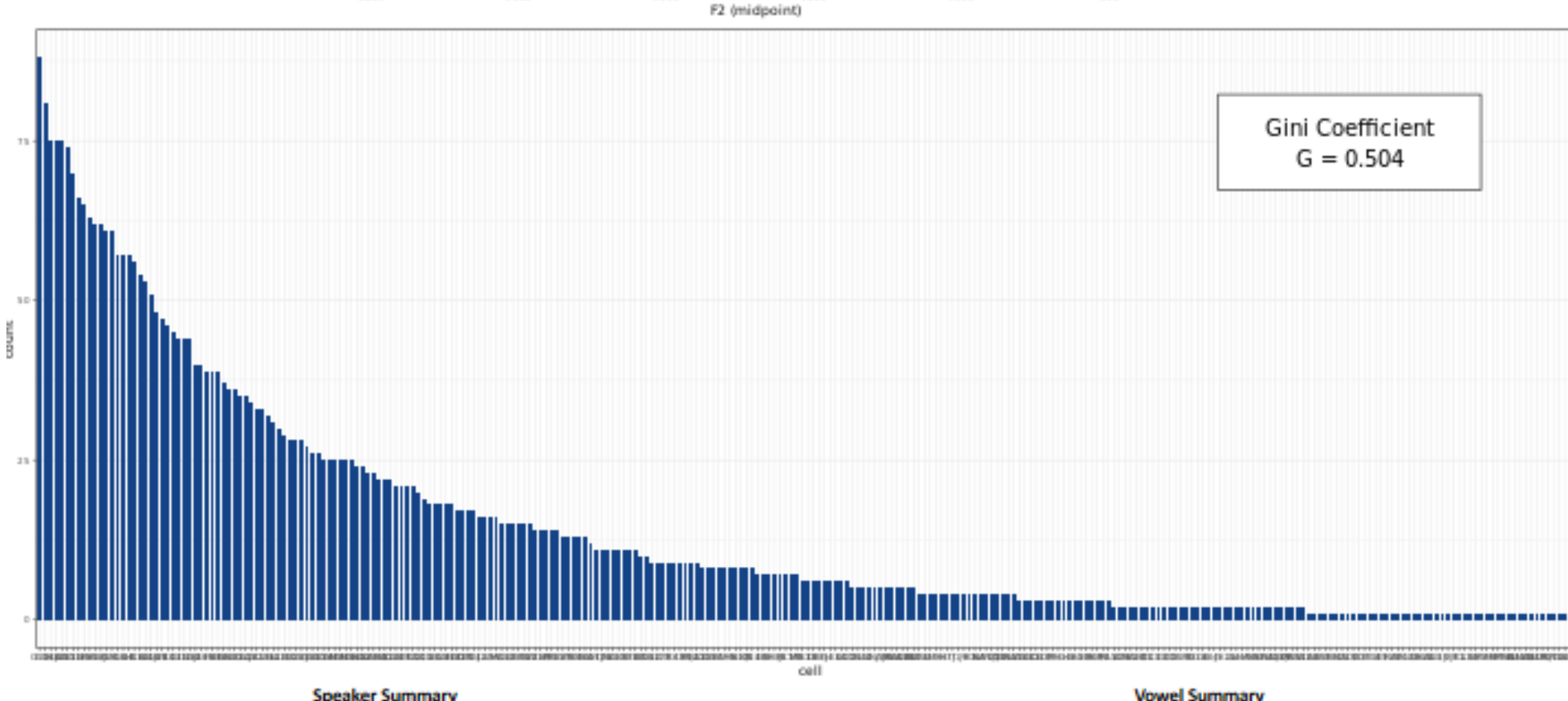
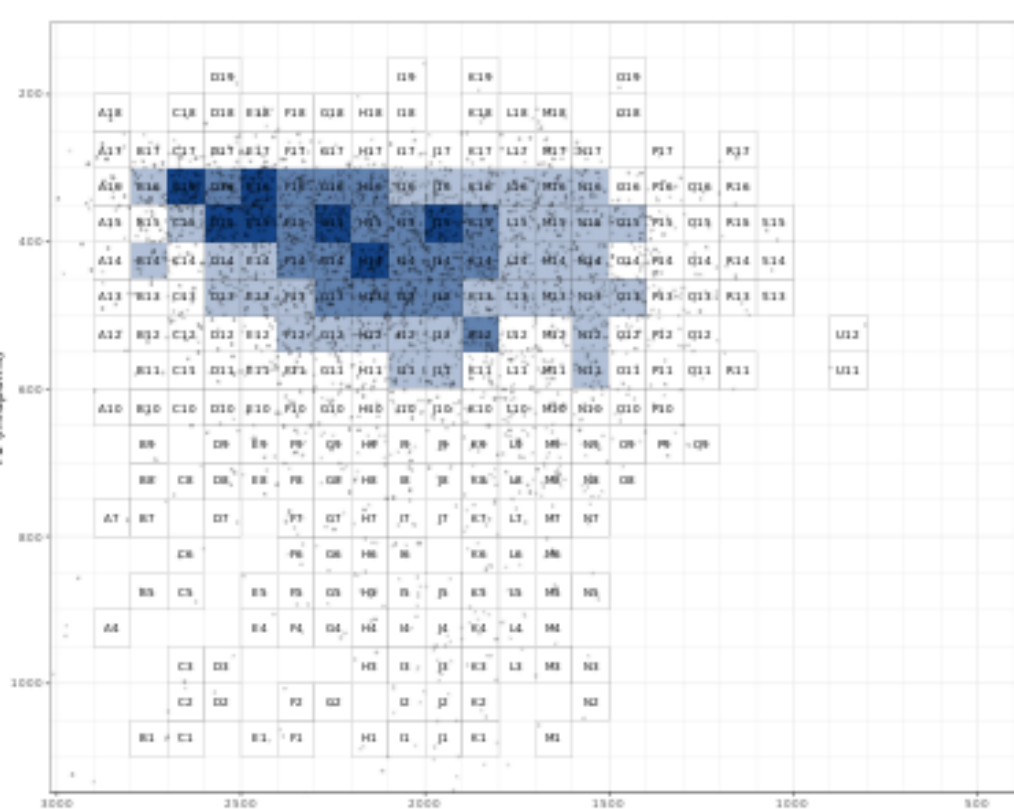


## Abstract

We have extracted c. 2 million tokens of vowels from a rigorous sample of 63 speakers across the American South in an NSF-funded project for forced alignment and automatic formant extraction. We show how our vowel measurements across the whole region differ from national mean F1/F2 scores. We contrast men and women, and African Americans and non-African Americans, within the Southern region.

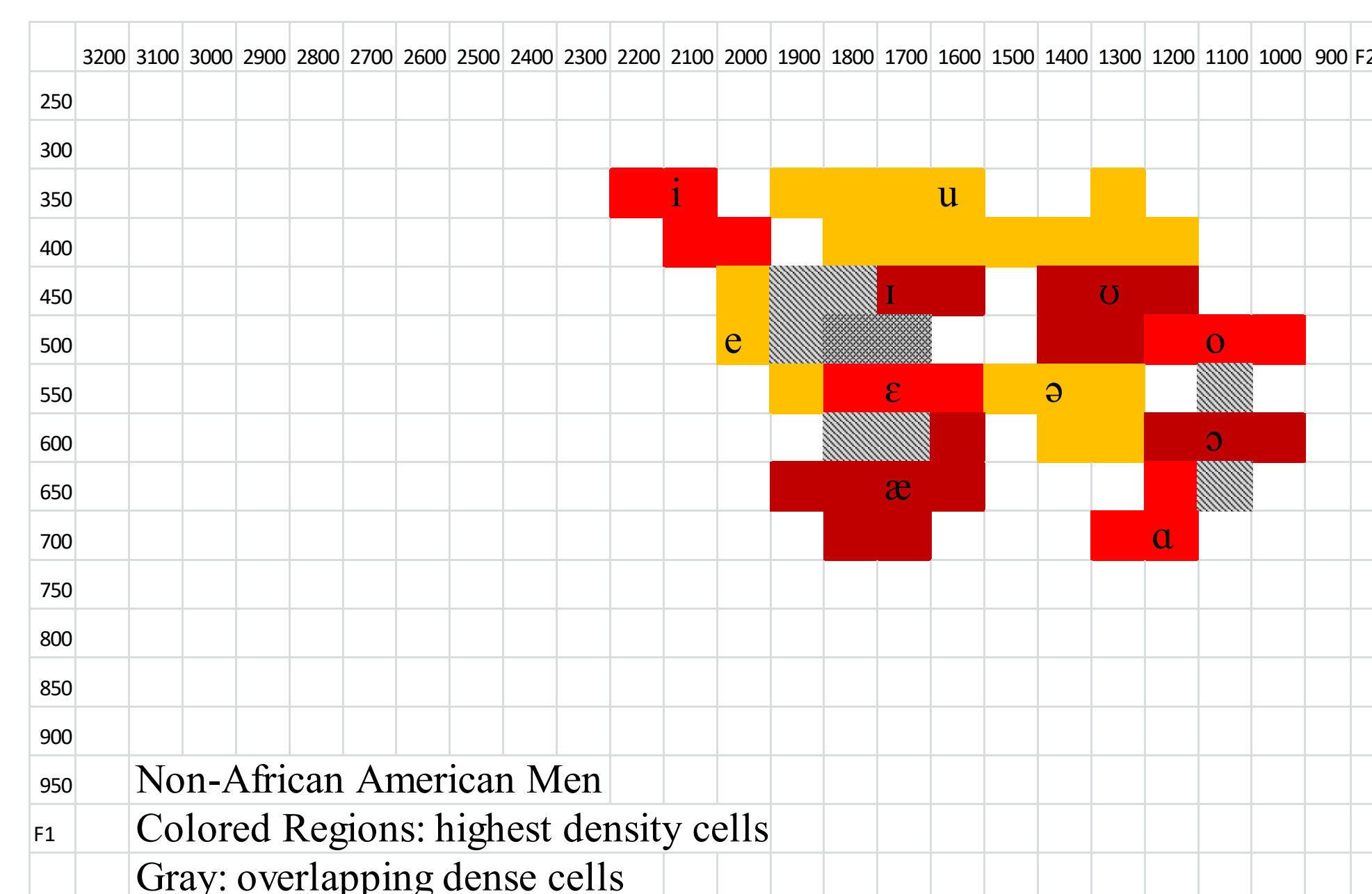
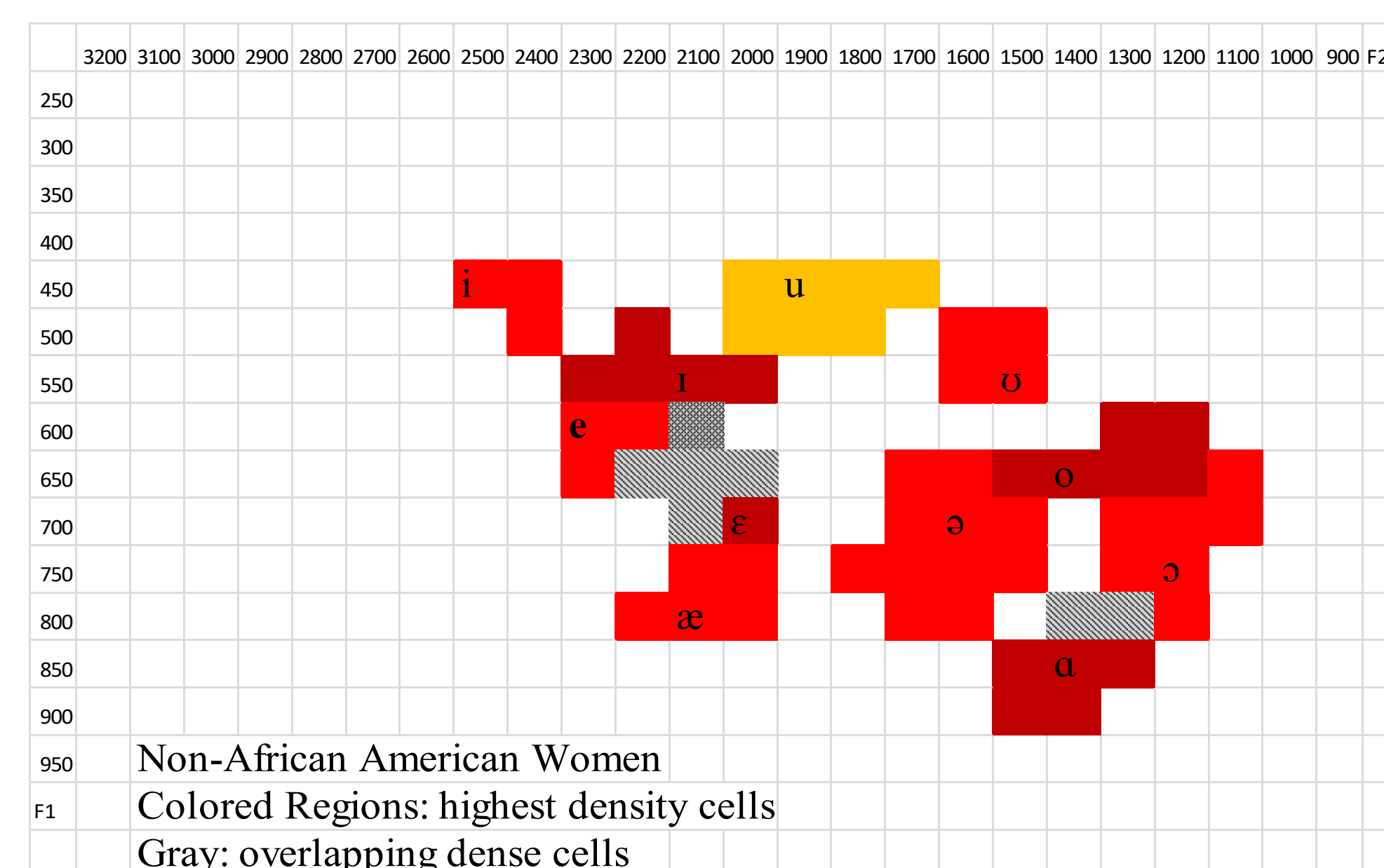
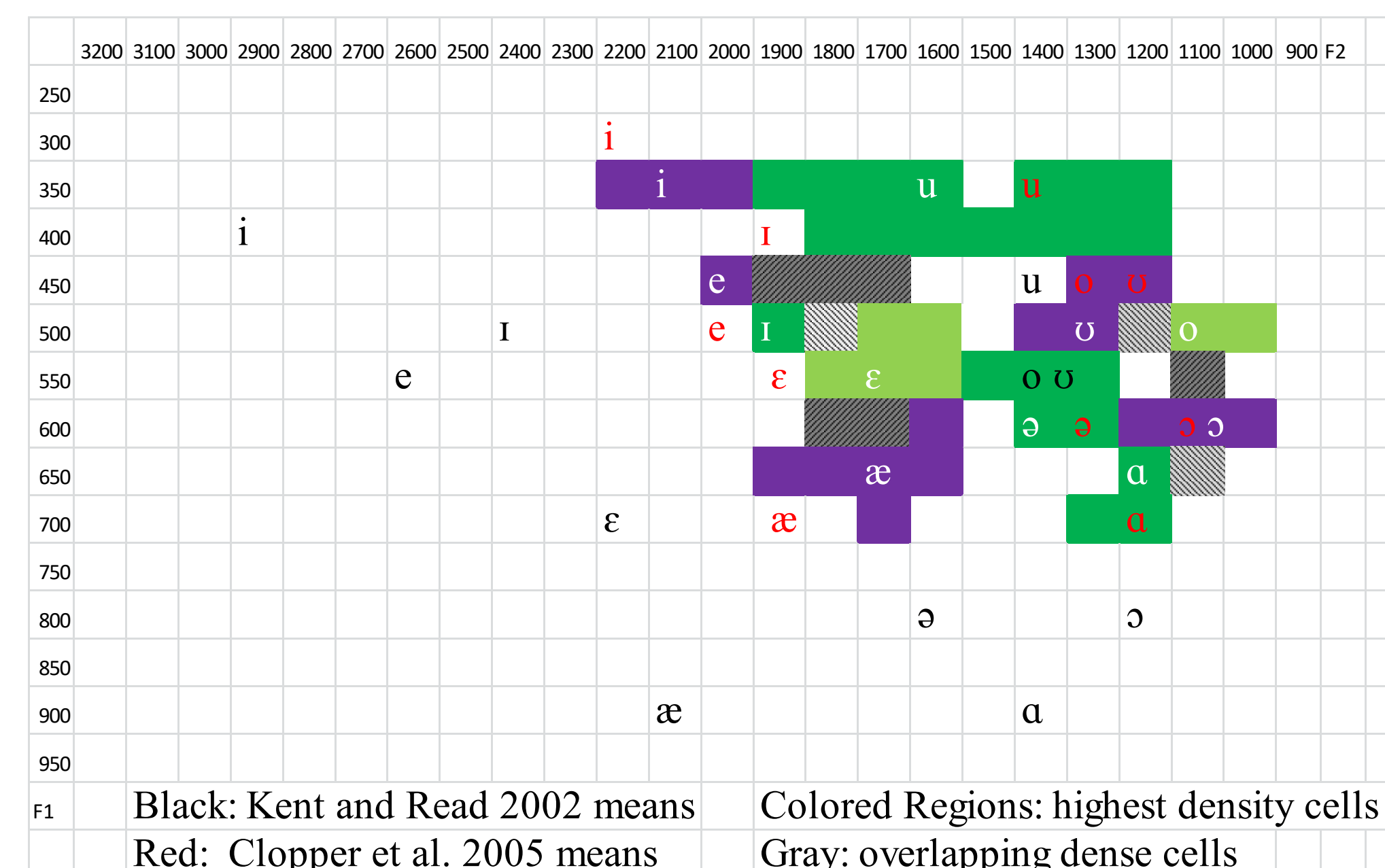
## Methods

The Digital Archive of the Southern Speech (DASS) is an audio corpus of semi-spontaneous linguistic atlas interviews (Kretzschmar et al. 2013) derived from the Linguistic Atlas of the Gulf States (Pederson et al. 1986). Transcription, forced alignment, and acoustic analysis of DASS has been completed. For insight into the methods, see Renwick et al. (2017) and Olsen et al. (2017). We used the Montreal Forced Aligner for forced alignment and FAVE for formant extraction. Tokens are shown in a 19x24 grid (456 cells), with shading for density into shades of blue (darkest = densest). The chart below shows the FLEECE vowel for African American women (4016 tokens, as gray dots). There is a nonlinear distribution of cell densities. Only the densest cells are shown at right.



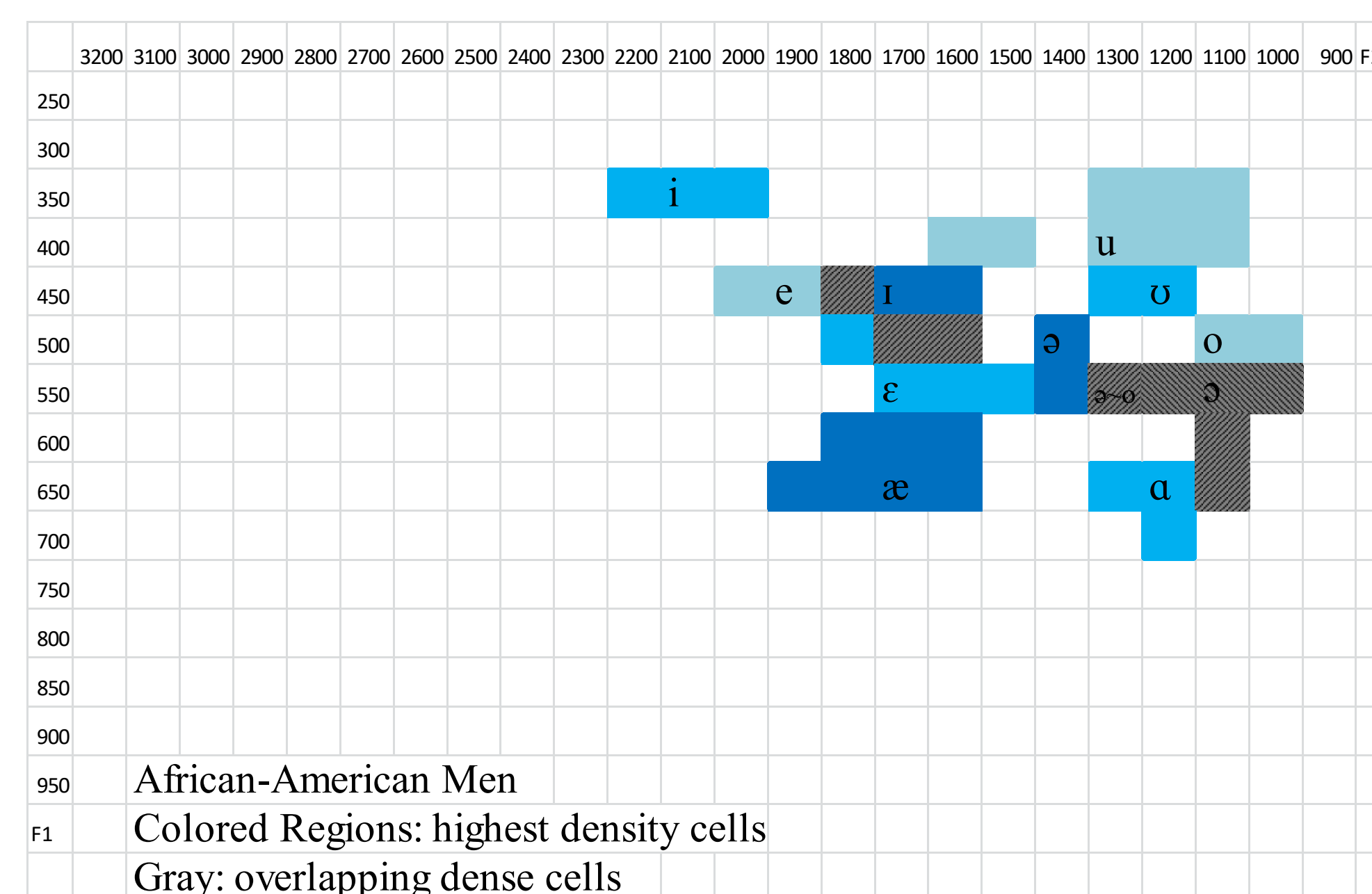
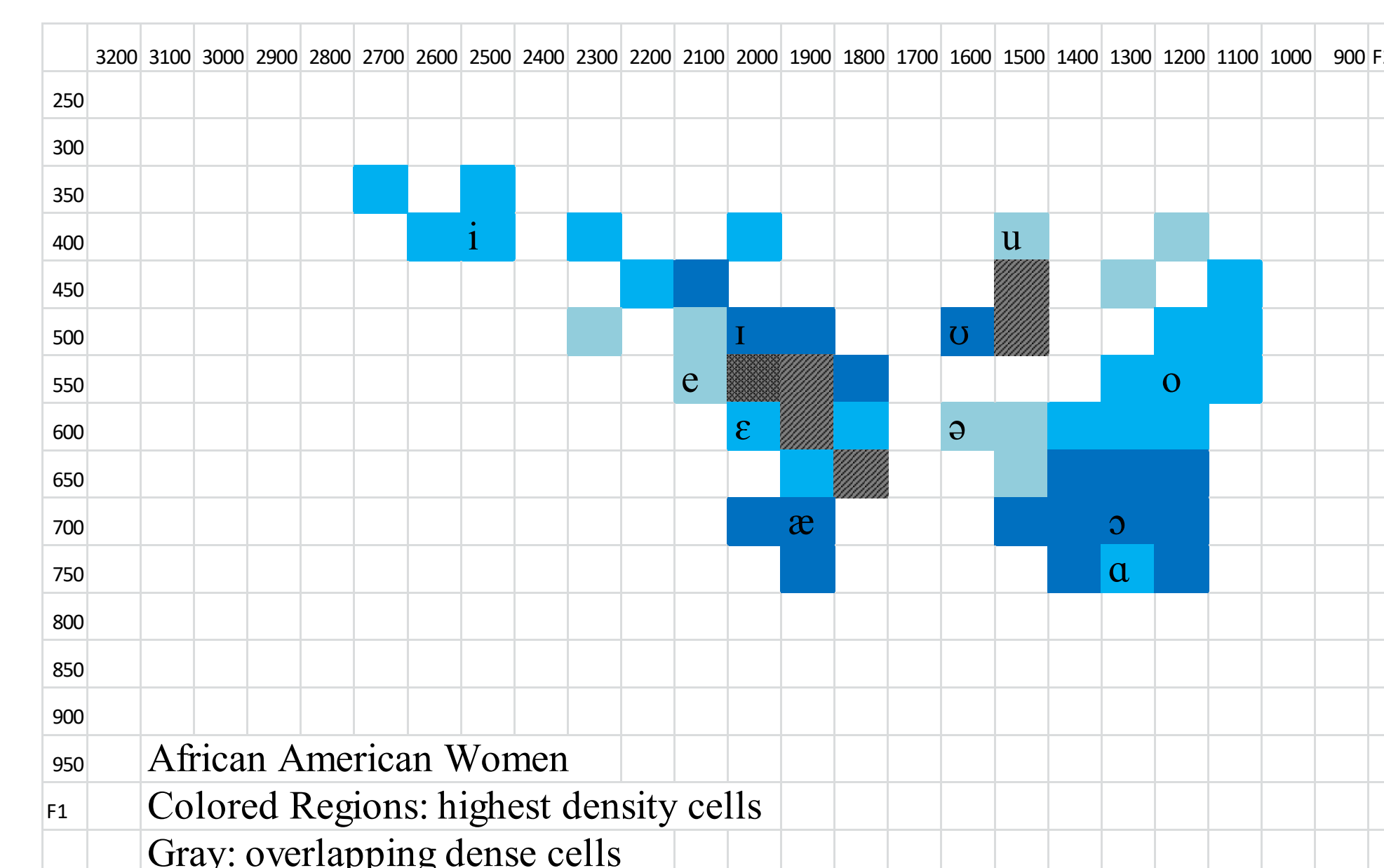
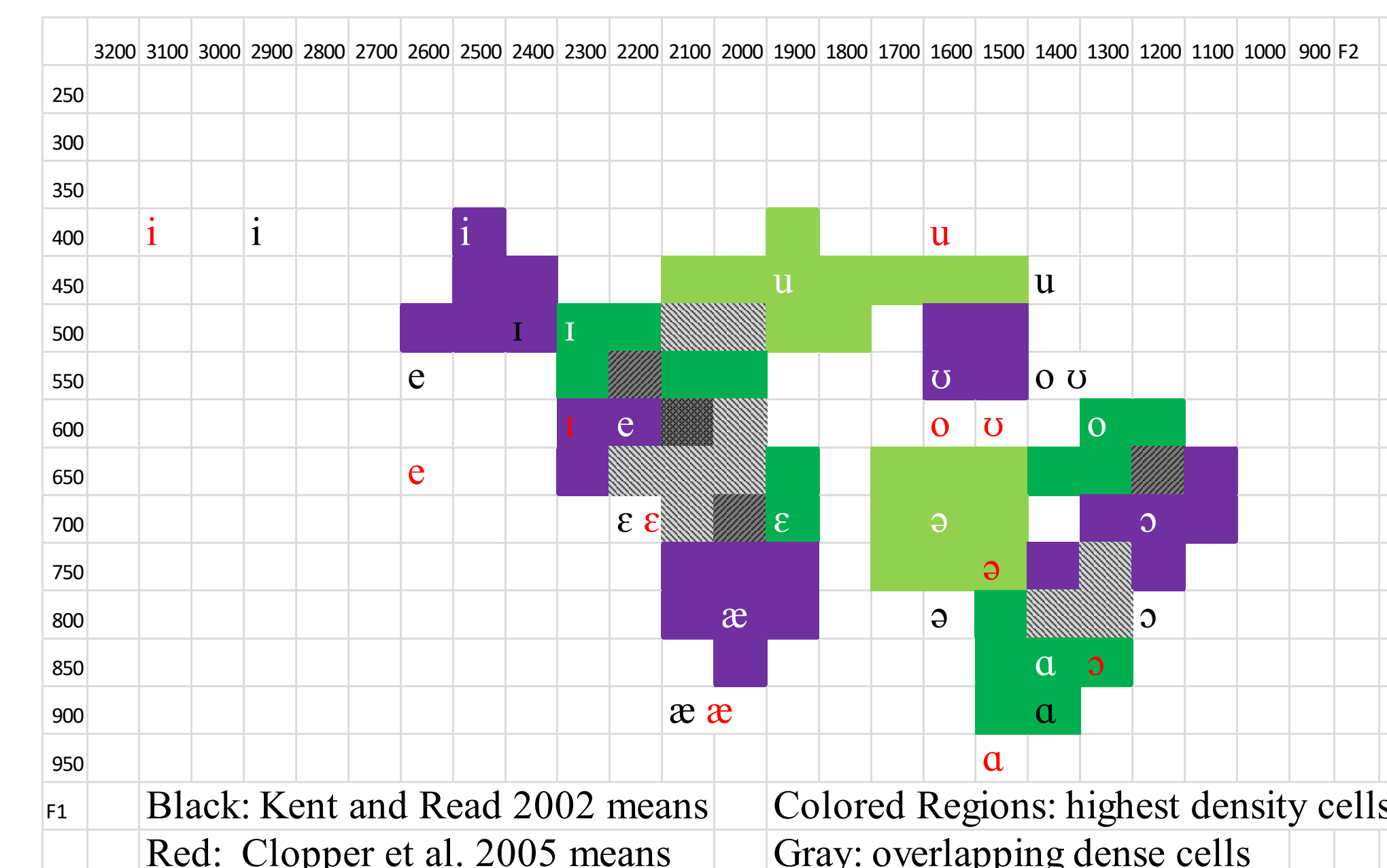
## Men

33 men, Georgia to Texas (10 African Americans), DASS sample of LAGS from 1970s interviews



## Women

30 women, Georgia to Texas (6 African Americans), DASS sample of LAGS from 1970s interviews



## Discussion

**MEN:** Kent and Read means are outside the current range; Clopper et al. is closer. Vowel regions show a wide range for [u] (fronting in progress?), while [o] is not fronted. [ɪ] and [e] heavily overlap, tend to be reversed as in the Southern shift model.

**WOMEN:** Kent and Read means are outside the current range; Clopper et al. is closer but not as good as for the men. Vowel regions again show a wide range for [u] (fronting in progress?) while [o] is not fronted. [ɪ], [e], and [ɛ] overlap heavily, without reversal. The low back vowels show more overlap than the men's.

**AFRICAN AMERICAN WOMEN:** Scattered dense cells for high vowels. [u] has some fronted density. Heavy overlap between [ɪ], [e], and [ɛ], without apparent reversal of [ɪ] and [e]. [æ] is somewhat higher than non-African American women's. Low back vowels are distinct.

**NON-AFRICAN AMERICAN WOMEN:** [u] is well front, with some fronted density of [o]. Some overlap of low back vowels. Heavy overlapping of [e] and [ɛ], without apparent reversal of [ɪ] and [e].

**AFRICAN AMERICAN MEN:** [u] is well back, with heavy overlapping of low back vowels and [o]. [ɪ] and [e] show reversal with heavy overlap. Little evidence of raised [æ].

**NON-AFRICAN AMERICAN MEN:** [u] has a wide range (fronting in progress?). Less overlap in the low back region, but heavy overlapping of front vowels without reversal of [ɪ] and [e].

## References

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Data from the Gazetteer of Southern Vowels (<http://lap3.libs.uga.edu/u/jstanley/vowelcharts/>)